

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant: Carl Knudsen

Group Art Unit: 2431

Application No.: 10/538,457

Examiner: Abrishamkar, Kaveh

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For: TAMPER RESISTANT PACKAGING AND APPROACH

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37(a)

This is an appeal to the Board of Patent Appeals and Interferences from the decision of the Examiner dated December 2, 2009, which finally rejected claims 1 and 3-20 in the above-identified application. The Office date of receipt of Appellant's Notice of Appeal was March 2, 2010. This Appeal Brief is hereby submitted pursuant to 37 C.F.R. § 41.37(a).

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I. REAL PARTY IN INTEREST

The real party in interest is the assignee of the full interest in the invention, NXP B.V., of Eindhoven, Netherlands.

II. RELATED APPEALS AND INTERFERENCES

To the best of Appellant's knowledge, there are no appeals or interferences related to the present appeal that will directly affect, be directly affected by, or have a bearing on the Board's decision in the instant appeal.

III. STATUS OF CLAIMS

Claim 2 is canceled.

No claims are withdrawn.

No claims are objected to.

Claims 1 and 3-20 stand rejected as follows:

Claims 1, 8-12, 15-17, and 19-20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Kommerling et al. (U.S. Pat. No. 7,005,733, hereinafter Kommerling).

Claims 1, 3-7, and 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sano (JP 3084959 A) in view of Kommerling.

Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kommerling in view of Fujiki et al. (JP 7209019 A, hereinafter Fujiki).

Claims 17-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kommerling in view of Double et al. (U.S. Pat. No. 5,129,629, hereinafter Double).

Claims 1 and 3-20 are the subject of this appeal. A copy of the claims is set forth in the Claims Appendix.

IV. STATUS OF AMENDMENTS

There were proposed amendments submitted subsequent to the Final Office Action mailed December 2, 2009. The Advisory Action, received from the Examiner

with a notification date of February 24, 2010, stated that the proposed amendments would be entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

This section of this Appeal Brief is set forth to comply with the requirements of 37 C.F.R. § 41.37(c)(1)(v) and is not intended to limit the scope of the claims in any way. Examples of implementations of the limitations of independent claims 1, 15, 16, and 19 are described below.

The language of claim 1 relates to an integrated circuit arrangement. In particular, claim 1 recites an integrated circuit device, a package and a detection circuit. Fig. 1, integrated circuit device 100, package 106, and detection circuit 160; Detailed Description, page 4, lines 6-7 and 29-32. The integrated circuit device has a plurality of magnetically-responsive circuit nodes. Detailed Description, page 2, line 13 and page 4, lines 8-10. The package is adapted to inhibit access to the integrated circuit device and including a plurality of magnetized particles therein. Detailed Description, page 2, lines 14-15 and page 4, line 11. The magnetically-responsive circuit nodes magnetically respond to the plurality of magnetized particles such that a change in magnetic field collectively provided by the magnetized particles renders a change in a magnetic state of at least one of the magnetically-responsive circuit nodes. Detailed Description, page 4, lines 12-14 and lines 20-23. The detection circuit is adapted to detect the magnetic state of the magnetically-responsive circuit nodes. Detailed Description, page 3, lines 31-33. The detection circuit is adapted to, in response to a change in the magnetic state, detect that the package has been tampered with. Detailed Description, page 3, line 33 through page 4, lines 1-5 and page 4, lines 30-33.

The language of claim 15 relates to an integrated circuit arrangement. In particular, claim 15 recites an integrated circuit chip, a plurality of magnetically-responsive memory elements, a package, a plurality of magnetic particles and a tamper-protection circuit. Fig. 1, integrated circuit device 100 having a substrate 104 having circuitry 108, magnetically-responsive circuit elements 130-134, package 106, magnetic particles 120-125, and tamper-protection circuit 160; Detailed Description, page 4, lines 6-32. The magnetically-responsive memory elements are adapted to store a logical state

as a function of a magnetic state of a magnetic element applying a magnetic field to the magnetically-responsive memory element. Detailed Description, page 2, lines 19-24 and page 5, lines 17-18. The package covers at least a portion of the integrated circuit chip and prevents access to the portion of the integrated circuit chip. Detailed Description, page 2, lines 24-26 and page 3, lines 27-29. At least some of the plurality of magnetically-responsive memory elements have a logic state that is responsive to a magnetic field generated by at least one of the plurality of magnetic particles. Detailed Description, page 2, lines 26-28 and page 5, lines 21-22. The tamper-protection circuit is adapted to detect the logic state of the at least some of the plurality of magnetically-responsive memory elements and, in response to the detected logic state changing, detect that the package has been tampered with. Detailed Description, page 2, lines 29-32, page 3, line 31 through page 4 line 5, and page 5, lines 26-30.

The language of claim 16 relates to a tamper-protection arrangement. In particular, claim 16 recites a package, a plurality of magnetic particles, and a tamper-protection circuit. Fig. 1, package 106, magnetic particles 120-125, tamper-protection circuit 160; Detailed Description, page 4, lines 6-7 and 29-32. Detailed Description, page 4, lines 6-32. The package is arranged to cover at least a portion of an integrated circuit chip having at least one magnetically-responsive element therein, the package being arranged to prevent access to at least a portion of the integrated circuit chip. Detailed Description, page 2, lines 21-26 and page 5, lines 19-20. The plurality of magnetic particles in the package are arranged to cause a detectable magnetic response in the at least one magnetically-responsive element. Detailed Description, page 2, lines 26-28 and page 3, lines 29-31. The tamper-protection circuit is adapted to detect the magnetic response of the at least one magnetically-responsive element and, in response to the detected magnetic response changing, detects that the package has been tampered with. Detailed Description, page 2, lines 29-32, page 3, line 31 through page 4 line 5, and page 5, lines 26-30.

The language of claim 19 relates to a method for protecting an integrated circuit device from tampering. The method includes detecting a magnetic state of a plurality of magnetically-responsive circuit nodes in the integrated circuit device. Detailed Description, page 2, lines 16-19. The method also includes detecting that the integrated

circuit device has been tampered with in response to detecting a change in the magnetic state of the plurality of magnetically-responsive circuit nodes. Detailed Description, page 2, lines 29-32.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Whether claims 1, 8-12, 15-17, and 19-20 are anticipated by Kommerling under 35 U.S.C. § 102(e).
- B. Whether claims 1, 3-7 and 14 are patentable over the combination of Sano and Kommerling under 35 U.S.C. § 103(a).
- C. Whether claim 13 is patentable over the combination of Kommerling and Fujiki under 35 U.S.C. § 103(a).
- D. Whether claims 17-18 are patentable over the combination of Kommerling and Double under 35 U.S.C. § 103(a).

VII. ARGUMENT

For the purposes of this appeal, claims 1, 8-12, 15-17, and 19-20 are argued together as a group for purposes of the question of anticipation by Kommerling under 35 U.S.C. § 102(e). Claims 1, 3-7 and 14 are argued together as a separate group for purposes of the question of patentability over the combination of Sano and Kommerling under 35 U.S.C. § 103(a). Claim 13 is argued separately for purposes of the question of patentability over the combination of Kommerling and Fujiki under 35 U.S.C. § 103(a). Claims 17-18 are argued together as a separate group for purposes of the question of patentability over the combination of Kommerling and Double under 35 U.S.C. § 103(a).

A. Claims 1, 8-12, 15-17, and 19-20 are not anticipated by Kommerling

Appellant respectfully submits that claim 1 is not anticipated by Kommerling because Kommerling does not teach all of the limitations of the claim. Claim 1 recites:

An integrated circuit arrangement comprising:

an integrated circuit device having a plurality of magnetically-responsive circuit nodes;

a package adapted to inhibit access to the integrated circuit device and including a plurality of magnetized particles therein, the magnetically-responsive circuit nodes magnetically responding to the plurality of magnetized particles such that a change in magnetic field collectively provided by the magnetized particles renders a change in a magnetic state of at least one of the magnetically-responsive circuit nodes; and

a detection circuit adapted to detect the magnetic state of the magnetically-

responsive circuit nodes and, in response to a change in the magnetic state, to detect that the package has been tampered with.
(Emphasis added.)

In response to the rejection under 35 U.S.C. 102, Kommerling does not disclose a circuit adapted to detect a magnetic state and, in response to a change in the magnetic state, to detect that the package has been tampered with. Kommerling merely discloses a cryptographic input unit that forms a cryptographic key from detected property outputs of sensors responsive to encapsulation properties (Kommerling, col. 5, lines 54-59). However, the cryptographic input unit of Kommerling forms the cryptographic key regardless of whether or not the encapsulation is tampered with. The cryptographic input unit merely forms a different cryptographic key if the encapsulation properties are changed. However, during the process of forming the key no tampering is detected. If there were no request by the CPU to access the memory, the altered key would not even be used, and the circuit of Kommerling would not be able to detect that the encapsulation has been tampered with. Access to data stored in the memory may be gained by removing parts or all of the encapsulation, without the circuit of Kommerling detecting that the encapsulation had been tampered with at the time of access. The key is only used when the CPU requests access to the memory and the key is then used to decrypt data from the memory (Kommerling, col. 6, lines 4-16). Even then, the circuit would not detect that the encapsulation has been tampered with. Rather, the circuit would just no longer correctly decrypt the encrypted data from the memory. Even if the incorrectly decrypted data were understood as detecting tampering, the detection would not be in response to a change in magnetic properties of the encapsulation, but in response to a request by the CPU to access the memory.

For the reasons presented above, Kommerling does not disclose all of the limitations of the claim because Kommerling does not disclose a circuit adapted to detect a magnetic state and, in response to a change in the magnetic state, to detect that the package has been tampered with, as recited in the claim. Accordingly, Appellant respectfully asserts that claim 1 is not anticipated by Kommerling because Kommerling does not disclose all of the limitations of the claim.

Independent claims 15, 16 and 19

Independent claims 15, 16 and 19 include similar limitations to claim 1. Although the language of claim 15, 16 and 19 differs from the language of claim 1 and the scope of claims 15, 16 and 19 should be interpreted independently of claim 1, Appellant respectfully asserts that the remarks provided above in regard to claim 1 apply also to claims 15, 16 and 19.

Dependent claims 8-12, 17 and 20

Dependent claims 8-12 depend from claim 1. Dependent claim 17 depends from claim 16. Dependent claim 20 depends from claim 19. Appellant respectfully asserts that claims 8-12, 17 and 20 are allowable based on allowable base claims. Additionally, each of claims 8-12, 17 and 20 may be allowable for further reasons, as described below.

In regard to claim 17, Appellant respectfully submits that claim 17 is not anticipated by Kommerling because Kommerling does not disclose all of the limitations of the claim. Claim 17 recites “a tamper-response circuit adapted to alter a characteristic of the integrated circuit chip in response to the tamper-protection circuit detecting the magnetic response of the at least one magnetically-responsive element.” (emphasis added). In contrast, Kommerling does not disclose detecting a magnetic response and in response to the detected magnetic response altering a characteristic of the integrated circuit chip, as described above with reference to claim 1. Accordingly, Appellant respectfully asserts that claim 17 is not anticipated by Kommerling because Kommerling does not disclose a tamper-response circuit adapted to “alter a characteristic of the integrated circuit chip in response to the tamper-protection circuit detecting the magnetic response of the at least one magnetically-responsive element,” as recited in claim 17.

B. Claims 1, 3-7 and 14 are patentable over the combination of Sano and Kommerling

The rejection of claim 1 is improper for at least two reasons. First, the combination of references does not teach detecting that the package has been tampered with in response to a change in the magnetic state. Second, the rejection of claim 1 is

improper because the Examiner does not establish a *prima facie* rejection for claim 1.

Claim 1 recites:

An integrated circuit arrangement comprising:

an integrated circuit device having a plurality of magnetically-responsive circuit nodes;

a package adapted to inhibit access to the integrated circuit device and including a plurality of magnetized particles therein, the magnetically-responsive circuit nodes magnetically responding to the plurality of magnetized particles such that a change in magnetic field collectively provided by the magnetized particles renders a change in a magnetic state of at least one of the magnetically-responsive circuit nodes; and

a detection circuit adapted to detect the magnetic state of the magnetically-responsive circuit nodes and, in response to a change in the magnetic state, to detect that the package has been tampered with.

1. The combination of references does not teach detecting that the package has been tampered with in response to a change in the magnetic state

Appellant asserts that claim 1 is patentable over the combination of Sano and Kommerling because the combination of references does not teach detecting that the package has been tampered with in response to a change in the magnetic state.

The Final Office Action admits that Sano does not teach a plurality of magnetically-responsive circuit nodes and a package adapted to inhibit access to the integrated circuit device and including a plurality of magnetized particles therein. Further, the Final Office Action admits that Sano does not teach detecting tampering in response to a change in the detected magnetic field (Final Office Action, page 8). The Final Office Action cites Kommerling as teaching an integrated circuit having Hall effect sensors disposed covering all circuit-containing areas and an encapsulation surrounding a device substrate on both sides and comprising an epoxy resin matrix. However, Appellant respectfully asserts that Kommerling also does not teach detecting tampering in response to a change in the detected magnetic field, as discussed above in regard to rejection of claim 1 under 35 C.F.R 102. Therefore, the combination of Sano and Kommerling does not teach detecting that the package has been tampered with in response to a change in the magnetic state.

2. The proposed combination of references is improper

Appellant asserts that claim 1 is patentable over the combination of Sano and Kommerling because the proposed combination of cited references is improper. Specifically, the reasoning presented in the Office Action is insufficient to support a *prima facie* case of obviousness for claim 1.

In order to establish a *prima facie* case of obviousness of a claim under 35 U.S.C. 103, the Office Action must present a clear articulation of the reason why the claimed invention would have been obvious. MPEP 2142 (citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___ (2007)). The analysis must be made explicit. *Id.* Additionally, rejections based on obviousness cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *Id.*

Thus, there are at least three criteria that must be satisfied in order to establish a *prima facie* case of obviousness:

- 1) The rejection must include a conclusion that the claimed invention would have been obvious.
- 2) The rejection must include articulated reasoning to support the asserted conclusion of obviousness.
- 3) The articulated reasoning must be based on some rational underpinning.

Appellant submits that the Office Action does not establish a *prima facie* case of obviousness because the articulated reasoning is not based on a rational underpinning.

While the Office Action appears to assert a conclusion of obviousness and an articulated reasoning in support of that conclusion, Appellant respectfully submits that the articulated reasoning is not based on a rational underpinning. Specifically, the articulated reasoning lacks a rational underpinning because the reasoning presented in the Office Action is technically deficient to support the proposed combination of cited

references. Furthermore, the proposed combination would render the prior art unsatisfactory for its intended purpose.

a. Sano Teaches Away from the Suggested Modification

As an additional basis for patentability, the articulated reasoning of the Office Action is not rational because Sano teaches away from a permanent magnet bonded to an encapsulation layer and Hall effect sensors, as taught by Kommerling.

In regard to the technical aspects of the proposed modification of replacing the detachable magnet of Sano with the epoxy resin matrix and permanent magnets of Kommerling, Appellant submits that the Office Action does not provide any technical analysis to show how using the epoxy resin matrix and permanent magnets of Kommerling might improve the versatility of the system of Sano. In fact, Sano teaches away from using permanent magnets as taught by Kommerling.

The MPEP states that it is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) (MPEP 2145). In the device of Sano, a freely detachable magnet is used in order to easily change a mode of an integrated circuit, where a Hall element detects a magnetic field from the outside of a package of the integrated circuit to set the mode (Sano, Abstract). On the other hand, Kommerling teaches permanent magnets bonded to an encapsulation layer by an epoxy resin matrix containing particles of various sizes, shapes and/or magnetic permeabilities. The encapsulation layer of Kommerling surrounds the substrate containing Hall effect sensors and the permanent magnets are therefore also bonded to the Hall effect sensors (Kommerling, Fig. 5B and col. 10, lines 44-58). Therefore, because Sano teaches a magnet that is freely detachable from the Hall element, Sano teaches away from permanent magnets bonded to Hall effect sensors.

For the reasons presented above, the articulated reasoning presented in support of the proposed combination of Sano and Kommerling is not rational because Sano teaches away from permanent magnets bonded to Hall effect sensors, as taught by Kommerling. Consequently, the Office Action does not establish a *prima facie* case of obviousness because the articulated reasoning in the Office Action is not rational. Accordingly,

Appellant respectfully asserts the rejection of claim 1 is improper because the Office Action does not establish a *prima facie* case of obviousness.

b. The Proposed Combination would Render the Prior Art Unsatisfactory for its Intended Purpose

Appellant asserts that the proposed combination of Sano and Kommerling is improper. In asserting a combination of references as a basis for an obviousness rejection, the proposed combination or modification cannot render the prior art unsatisfactory for its intended purpose. MPEP 2143.01(V). Here, the combination of teachings proposed in the Office Action would render the device of Sano unsatisfactory for its intended purpose.

The proposed combination of Sano and Kommerling is improper because the use of an epoxy resin matrix and a permanent magnet, as taught in Kommerling, within the device of Sano would render the device of Sano unsatisfactory for its intended purpose. Sano provides a device to set an operating mode of a circuit without installing a proprietary terminal by using a detachable magnet, a Hall element, and a mode changeover circuit (Sano, Abstract). The Final Office Action admits that Sano does not teach a plurality of magnetically-responsive circuit nodes and a package adapted to inhibit access to the integrated circuit device and including a plurality of magnetized particles therein. Further, the Final Office Action admits that Sano does not disclose detecting tampering when a change in magnetic field is detected (Final Office Action, page 8). The Final Office Action cites Kommerling as teaching an integrated circuit having Hall effect sensors disposed covering all circuit-containing areas and an encapsulation surrounding a device substrate on both sides and comprising an epoxy resin matrix. The Final Office Action concludes that replacing the detachable magnet of Sano with the epoxy resin matrix, the permanent magnets, and the Hall elements of Kommerling would yield predictable results such as protecting the integrated circuit device from tampering (Final Office Action, page 8). However, Appellant respectfully disagrees because such modification would undermine the purpose of the Sano reference.

As consistent with relevant case law and the M.P.E.P., there is no motivation to modify a reference where the modification would undermine or defeat the purpose of the reference (see, for example, *In re Gordon*, 733 F.2D 900, 221 USPQ 1125 (Fed. Cir. 1984)). An object of the Sano reference is to set an operating mode of a circuit without installing a proprietary terminal by using a detachable magnet, a Hall element, and a mode changeover circuit (Sano, Abstract). Sano further teaches a device to instruct a mode changeover when a Hall element detects a magnetic field from a detachable magnet (Sano, Abstract).

The Final Office Action attempts to modify Sano with the epoxy resin matrix, the magnets, and the Hall elements of Kommerling. Appellant submits that such a modification would render the Sano reference inoperable for its stated purpose. The Sano reference teaches that a magnet is installed at the outside of the package so as to be freely detachable and further teaches that a mode changeover circuit instructs a mode changeover when a magnetic field is detected by the Hall element (Sano, Abstract).

Appellant submits that if the detachable magnet of Sano is replaced with the epoxy resin matrix and permanent magnets of Kommerling, the device of Sano would not be able to change the operating mode of the circuit because adding an epoxy resin matrix and permanent magnets to protect against tampering would require the resin and magnets to be permanently attached to the integrated circuit. Thus the device of Sano as modified by Kommerling would not allow the operating mode of the circuit to be changed because in order to change the operating mode a freely detachable magnet is required. Furthermore, the particles within the matrix of the device of Kommerling work in conjunction with the fixed permanent magnets to distort the field lines of the magnetic field from the permanent magnets (Kommerling, col. 10, lines 53-67), and therefore, removing the particles and/or permanent magnets would result in a device that does not protect against tampering. Further, any attempt to provide an additional detachable magnet would change the magnetic field and therefore interfere with the properties detected by the Hall elements. Thus, replacing the freely detachable magnet of Sano with the epoxy resin matrix, permanent magnets, and hall elements of Kommerling would render the proposed modification inoperable.

Therefore, combining the references of Sano and Kommerling, as proposed in the Office Action, would render the device of Sano unsatisfactory for its intended purpose because the circuit of Sano as modified by Kommerling would no longer allow the operating mode of the circuit to be changed. Accordingly, Appellant respectfully asserts that independent claim 1 is patentable over the cited references because the proposed combination of references is improper.

Dependent claims 3-7 and 14

Appellant asserts that claim 3-7 and 14 are patentable over the combination of Sano and Kommerling at least for similar reasons to those presented above with respect to the rejection of claim 1 under 35 C.F.R 103. Specifically, the reasoning presented in the Office Action is insufficient to support a *prima facie* case of obviousness for claims 3-7 and 14.

Additionally, claims 3-7 and 14 depend from and incorporate all of the limitations of independent claim 1, which is patentable over the cited references. Appellant respectfully submits that dependent claims 3-7 and 14 are also patentable over the cited references based on allowable base claims. Additionally, each of claims 3-7 and 14 may be allowable for further reasons, as described below.

In regard to claim 3, Appellant respectfully submits that claim 3 is patentable over the combination of Sano and Kommerling because the combination of cited references is improper. Claim 3 recites a “comparison circuit adapted to compare the detected magnetic state with a reference state and to detect tampering with the package in response to the detected magnetic state being different than the reference state” (emphasis added). Examiner asserts that the mode changeover circuit of Sano inherently includes a comparison circuit with a reference voltage. Claim 3 depends from claim 1, and claim 3 has been rejected under 35 C.F.R 103 as being unpatentable over the combination of Sano and Kommerling. However, the reasoning presented in the Office Action for the proposed combination of Sano and Kommerling is insufficient to support a *prima facie* case of obviousness for claim 3. Furthermore, Kommerling does not disclose a comparison circuit adapted to compare the detected magnetic state with a reference state. In fact, Kommerling merely discloses forming a cryptographic input key from a plurality

of detected property outputs, but Kommerling does not disclose that a reference state is stored and compared to the cryptographic input key. In fact, Kommerling teaches away from storing a reference state as Kommerling teaches that the key is not held within a register so that it can not be accessed through stripping away the coating. The only key present in the system is the key formed from the detected property outputs (Kommerling, col. 2, lines 50-54). Accordingly, Appellant respectfully asserts that claim 3 is patentable over Sano and Kommerling because the proposed combination of cited references is insufficient to support a *prima facie* case of obviousness for claim 3.

In regard to claim 4, Appellant respectfully submits that claim 4 is patentable over the combination of Sano and Kommerling because the proposed combination of cited references is insufficient to support a *prima facie* case of obviousness for claim 4, as described above with reference to claim 3. Claim 5 is dependent on claim 4 and is patentable over Sano and Kommerling at least for the reasons stated above with reference to claim 4.

In regard to claims 6 and 7, Appellant respectfully submits that claims 6 and 7 are patentable over the combination of Sano and Kommerling because the proposed combination of cited references is insufficient to support a *prima facie* case of obviousness for claims 6 and 7, as described above with reference to claim 3.

C. Claim 13 is patentable over the combination of Kommerling and Fujiki at least based on an allowable base claim

Appellant respectfully submits that dependent claim 13 is patentable over the cited references based on an allowable base claim. Additionally, claim 13 may be allowable for further reasons.

D. Claims 17-18 are patentable over the combination of Kommerling and Double at least based on an allowable base

Appellant respectfully submits that dependent claims 17-18 are patentable over the cited references based on an allowable base claim. Additionally, claims 17-18 may be allowable for further reasons.

VIII. CONCLUSION

For the reasons stated above, claims 1 and 3-20 are patentable over the cited references. Thus, the rejections of claims 1 and 3-20 should be withdrawn. Appellant respectfully requests that the Board reverse the rejections of claims 1 and 3-20 under 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) and, since there are no remaining grounds of rejection to be overcome, direct the Examiner to enter a Notice of Allowance for claims 1 and 3-20.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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IX. CLAIMS APPENDIX

1. An integrated circuit arrangement comprising:
an integrated circuit device having a plurality of magnetically-responsive circuit nodes;
a package adapted to inhibit access to the integrated circuit device and including a plurality of magnetized particles therein, the magnetically-responsive circuit nodes magnetically responding to the plurality of magnetized particles such that a change in magnetic field collectively provided by the magnetized particles renders a change in a magnetic state of at least one of the magnetically-responsive circuit nodes; and
a detection circuit adapted to detect the magnetic state of the magnetically-responsive circuit nodes and, in response to a change in the magnetic state, to detect that the package has been tampered with.
2. (canceled)
3. The integrated circuit arrangement of claim 1, wherein the detection circuit includes a comparison circuit adapted to compare the detected magnetic state with a reference state and to detect tampering with the package in response to the detected magnetic state being different than the reference state.
4. The integrated circuit arrangement of claim 3, further comprising a memory adapted to store data representative of an untampered magnetic state of the magnetically-responsive circuit nodes, wherein the comparison circuit is adapted to compare the data stored in the memory with the detected magnetic state and to detect tampering with the package in response to the data stored in the memory indicating a different magnetic state than the detected magnetic state.
5. The integrated circuit arrangement of claim 4, wherein the memory includes a one-time programmable ROM.

6. The integrated circuit arrangement of claim 3, wherein the integrated circuit device is adapted to alter data stored in the integrated circuit in response to the comparison circuit detecting tampering with the package.
7. The integrated circuit arrangement of claim 3, wherein the integrated circuit device is adapted to set a tamper-detection flag in response to the comparison circuit detecting tampering.
8. The integrated circuit arrangement of claim 1, wherein the magnetically-responsive circuit nodes change in magnetic state in response to a sufficient amount of the package being removed to allow probing access to the integrated circuit device.
9. The integrated circuit arrangement of claim 1, wherein the magnetically-responsive circuit nodes change in magnetic state in response to a sufficient amount of the package being removed to expose a circuit element in the integrated circuit.
10. The integrated circuit arrangement of claim 1, wherein removal of a portion of the package sufficient to allow imaging access to the integrated circuit device renders the change in a magnetic state of the magnetically-responsive circuit nodes.
11. The integrated circuit arrangement of claim 1, wherein removal of a portion of the package sufficient to allow electrical access to the integrated circuit device renders the change in a magnetic state of the magnetically-responsive circuit nodes.
12. The integrated circuit arrangement of claim 1, wherein the package covers a substantial portion of the integrated circuit device, wherein the plurality of magnetized particles are distributed throughout the package and wherein removal of a portion of the package sufficient to allow access to the integrated circuit device renders the change in a magnetic state of the magnetically-responsive circuit nodes.
13. The integrated circuit arrangement of claim 1, wherein each magnetically-

responsive circuit node includes a circuit element that resistively responds to a magnetic field generated by the magnetized particles.

14. The integrated circuit arrangement of claim 1, wherein each magnetically-responsive circuit node includes: a mini magnet susceptible to a change in magnetic state as a function of a magnetic field from the magnetized particles; and a circuit element that resistively responds to a magnetic state of the mini magnet, wherein the mini magnet of the at least one of the magnetically-responsive circuit nodes changes state in response to the change in magnetic field collectively provided by the magnetized particles.

15. An integrated circuit arrangement comprising:

- an integrated circuit chip;

- a plurality of magnetically-responsive memory elements adapted to store a logical state as a function of a magnetic state of a magnetic element applying a magnetic field to the magnetically-responsive memory element;

- a package covering at least a portion of the integrated circuit chip and preventing access to the portion of the integrated circuit chip;

- a plurality of magnetic particles in the package, at least some of the plurality of magnetically-responsive memory elements having a logic state that is responsive to a magnetic field generated by at least one of the plurality of magnetic particles; and

- a tamper-protection circuit adapted to detect the logic state of the at least some of the plurality of magnetically-responsive memory elements and, in response to the detected logic state changing, detecting that the package has been tampered with.

16. An tamper-protection arrangement comprising:

- a package arranged to cover at least a portion of an integrated circuit chip having at least one magnetically-responsive element therein, the package being arranged to prevent access to at least a portion of the integrated circuit chip;

- a plurality of magnetic particles in the package and arranged to cause a detectable magnetic response in the at least one magnetically-responsive element; and

- a tamper-protection circuit adapted to detect the magnetic response of the at least

one magnetically-responsive element and, in response to the detected magnetic response changing, detecting that the package has been tampered with.

17. The tamper-protection arrangement of claim 16, further comprising a tamper-response circuit adapted to alter a characteristic of the integrated circuit chip in response to the tamper-protection circuit detecting the magnetic response of the at least one magnetically-responsive element.

18. The tamper-protection arrangement of claim 17, wherein the tamper-response circuit is adapted to erase memory from the integrated circuit chip in response to the tamper-protection circuit detecting the magnetic response of the at least one magnetically-responsive element.

19. A method for protecting an integrated circuit device from tampering, the method comprising:

detecting a magnetic state of a plurality of magnetically-responsive circuit nodes in the integrated circuit device; and

in response to detecting a change in the magnetic state of the plurality of magnetically-responsive circuit nodes, detecting that the integrated circuit device has been tampered with.

20. The method of claim 19, wherein detecting a magnetic state of a plurality of magnetically-responsive circuit nodes includes monitoring the magnetic state of the plurality of magnetically-responsive circuit nodes.

X. EVIDENCE APPENDIX

There is no evidence submitted with this Appeal Brief.

XI. RELATED PROCEEDINGS APPENDIX

To the best of Appellant's knowledge, there are no appeals or interferences related to the present appeal that will directly affect, be directly affected by, or have a bearing on the Board's decision in the instant appeal.